



Department of Biology

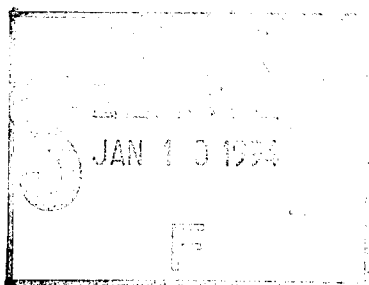
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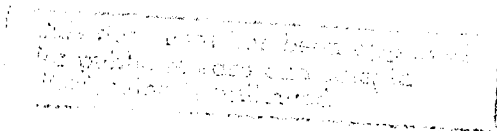
November 14, 1994

Dr. Terrie Williams
Scientific Officer
Code 341
ONR
800 N. Quincy Street
Arlington, VA 22217-5660

RE: N00014-93-1-1181

Dear Dr. Williams:

On behalf of the principal investigators, Dr. Peter Tyack and Dr. William A. Watkins, please find enclosed three copies of the first year progress report and one copy of Form A2-2, for the above-referenced AASERT grant which is entitled "Quantitative Evaluation of Behavior of Marine Mammals: Behavioral Response to Acoustic Disturbance".



Sincerely,

Jane E. Marsh

Jane E. Marsh
Senior Staff Assistant
Biology Department

xc: Administrative Grants Officer
Director, Naval Research Laboratory
Defense Technical Information Center ✓
ONR Code: 11SP, AASERT

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11 November 1994

Proposal title: Quantitative evaluation of behavior of marine mammals:
Behavioral response to acoustic disturbance

Performance report for Year 1

The student, Amy Samuels, is being supported to develop systematic observational protocols and quantitative methods for analyzing the behavior of cetaceans in order to provide quantitative baseline profiles of "normal" behavior and to identify reliable indicators of disturbance response. Research dedicated to identifying predictable patterns of normal behavior is essential for the design of robust disturbance experiments.

During 1993-94, Samuels participated in 2 research cruises that were dedicated to study behavioral responses of sperm whales to disturbance in the form of acoustic playback. Samuels was responsible for developing an observational protocol to document systematically the non-vocal behavior of whales during undisturbed baseline conditions and during experimental sound playback conditions. Samuels' protocol represents the first use of quantitative behavioral sampling techniques in sperm whale research. A focal-animal sampling scheme was developed to focus on details of behavior of a whale targeted for playback (identifiable by tag or by distinctive physical features). A scan sampling scheme was developed to document more broadly the behavior of other whales in the vicinity. Behavioral parameters include at-surface duration, dive time, group size and cohesion, direction of travel, speed of travel, and details of behavior while at the surface. The protocol includes supplementation of visual observations by regularly-scheduled video samples of the focal whale's behavior; procedures for analysis of baseline vs. playback video clips are being devised.

During the research cruises, Samuels was responsible for collecting data on whale behavior during baseline conditions and during a pilot playback experiment. Preliminary analyses were conducted of behavioral data collected during the pilot sound playback experiment in April 1993. Another research cruise is scheduled in April 1995.

Samuels is also working on quantitative analyses of "normal" behavior of bottlenose dolphins. Samuels and co-author, T. Gifford, will soon submit to Marine Mammal Science a manuscript entitled "Quantitative assessment of dominance relations among bottlenose dolphins." Based on quantitative behavioral sampling techniques adapted from primate behavioral research, this study is the first longitudinal, quantitative evaluation of dominance relationships for any cetacean. The manuscript describes the dominance assessment technique, presents long-term patterns of dominance relations within a captive colony of dolphins, and relates these patterns to what is known about the social structure of bottlenose dolphins and other highly social mammals.

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